

Executive Summary

IOSCO's request for commentary on their *Regulatory Reporting and Public Transparency Consultation (RR&PTC) Report* is timely and relevant given the current state of corporate bond markets. Since the Credit Crisis of 2008, the size of the global corporate bond market has rapidly expanded, large asset managers have significantly increased their corporate bond holdings, and dealers have gradually retreated from the market. This combination of forces has resulted in adverse market conditions that have impaired institutional liquidity and created an environment that could threaten the health of the global financial system. Mitigating this growing risk to the economy requires the modernization of corporate bond markets.

ViableMkts shares IOSCO's view that improving pre-trade and post-trade transparency in corporate bond markets would be helpful for monitoring regulatory compliance, investigating potential market abuses, and informing regulatory policy. However, we believe that enhancing transparency could spur corporate bond market modernization and improve the overall soundness of the global financial system.

The IOSCO (RR&PTC) Report's assertion that "increased transparency may, in certain circumstances and certain markets, potentially (negatively) impact liquidity," represents a commonly held belief that often slows the pace of progress. We contend that transparency itself does not impair market liquidity; it is the methodology used to induce market transparency that can have a positive or adverse impact on liquidity. Conceptually, this is not unlike botany. Sunlight and water are necessary to improve plant health, but the improper application of those elements will destroy plant-life.

ViableMkts' commentary on IOSCO's RR&PTC Report is intended to help outline a practical framework for establishing high-quality pre-trade and post-trade corporate bond market transparency. Our commentary will:

- 1) Examine the impact of accelerated market growth on corporate bond market structure
- 2) Outline market structure parallels between current corporate bond markets and the 1960's US equity market
- 3) Articulate the historical framework for successfully developing securities market transparency
- 4) Provide feedback on the current transparency goals outlined in IOSCO's (RR&PTC) Report

Our Approach

ViableMkts will leverage history, observable data, and market structure theory as primary sources to provide feedback and recommendations to IOSCO. Our analysis of corporate bond market structure will utilize the US market as a focal point because it contains robust, historical, post-trade data¹. US equity market development will be consistently referenced in our commentary.

ViableMkts acknowledges the significant differences between stocks and bonds. However, we also believe that all securities markets share fundamental properties and therefore follow the same laws of market dynamics.

About ViableMkts

[ViableMkts](#) is a strategic advisory firm focused on Capital Markets FinTech. [Our team](#) is comprised of proven financial market technology innovators with over 150 years of direct market experience derived from leadership positions at global investment banks, trading platforms, and exchanges. [Chris White](#)², the CEO of ViableMkts, is the author of this report and an active speaker on the topic of corporate bond market structure and technology.

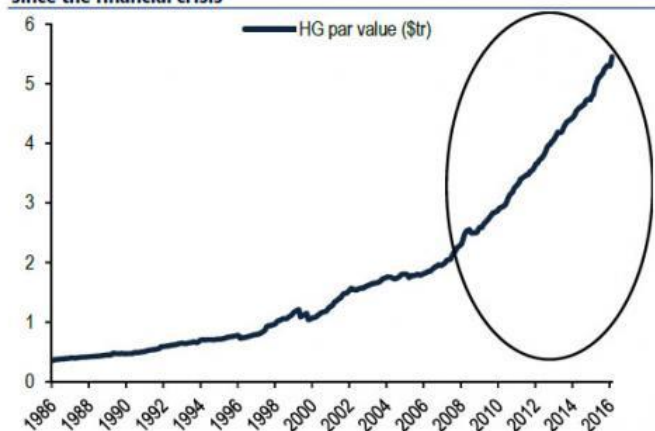
¹ The US corporate bond market established mandatory trade reporting in 2002

² Mr. White's background includes creating Goldman Sachs GSessions trading platform and designing their internal market making technology for global credit

1) Impact of Accelerated Growth on Corporate Bond Market Structure

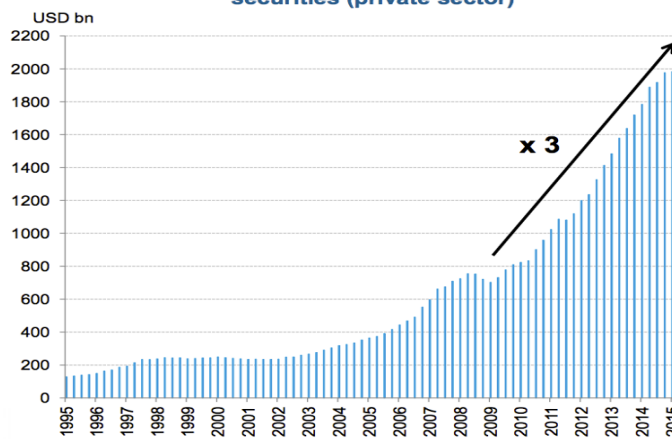
Post 2008, central banks (BOJ, ECB, BOE, and US Fed) have collectively suppressed interest rates and employed bond buying as a [tactic to protect and stimulate their respective regional economies](#). This activity has artificially accelerated the growth in the outstanding size of corporate bond markets around the world:

Figure 1: US HG corporate bond market has more than doubled in size since the financial crisis



Source: BofA Merrill Lynch Global Research

Developing countries: outstanding amount of debt securities (private sector)

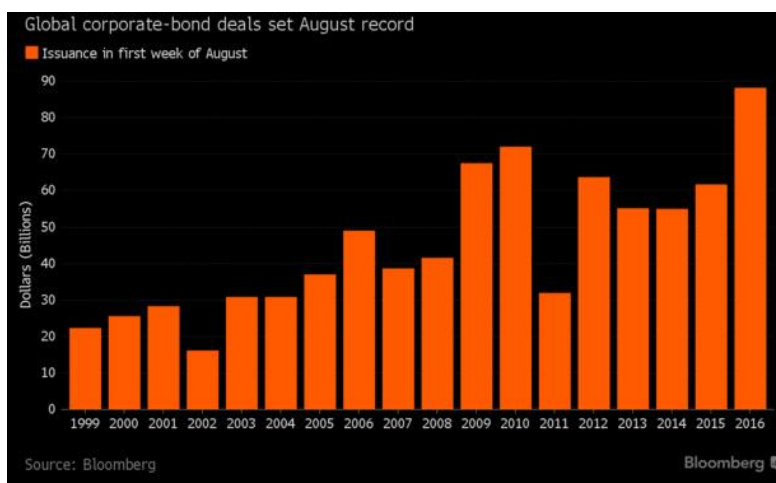


Sources: Societe Generale Private Banking, BIS

In April 2014, IOSCO explicitly acknowledged this trend in corporate bond market growth:

“corporate bond markets have become bigger, more important for the real economy, and increasingly global in nature”³

Since that statement, global corporate bonds continue to set new records for issuance:



Source: Bloomberg

Bloomberg

Understanding the dynamics of current corporate bond markets requires an examination of the key market structure trends that have been correlated with this accelerated growth pattern.

A) Elevated Concentration

As the outstanding size of the US corporate bond market has increased, holdings and trading activity have become more concentrated among a smaller group of market participants.⁴

³ OICV-IOSCO Report – Corporate Bond Markets: A Global Perspective – April 2014

⁴ “A handful of giant investors have the fate of the bond market in their hands” – Business Insider – October 2016

Money Managers' Allocation to Corporate Debt Has Surged



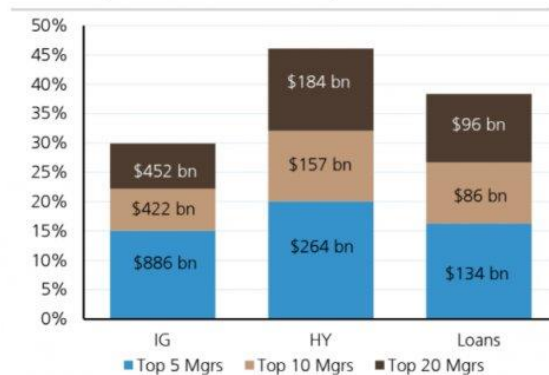
US firms.⁶ Buy-side institutions are now the overwhelmingly dominant holders of US corporate bond securities.

The surge in buy-side corporate bond holdings has been characterized by a growing imbalance between the size of corporate bond portfolios of large asset-managers and other buy-side institutions. In 2012, the Fed Report:

Institutional Herding in the Corporate Bond Market (Cai, Han, Li) found that the concentration of US corporate bonds among bond fund managers was much higher than comparative analysis conducted for the equity market.⁷

More recently, *Business Insider* featured a UBS report that illustrated the current state of asset-manager holdings concentration. In 2016, the top 5 asset-managers in investment grade US corporate bonds held 15% of outstanding investment grade issues, while the top 5 asset-managers in US high-yield corporate bonds held 20% of outstanding non-investment grade issues.⁸ There is ample evidence that high rates of holding concentration will adversely impact security pricing, liquidity, and volatility.⁹

Figure 12: Global Asset Manager Holdings (Across Funds): US Credit (% of total market value)

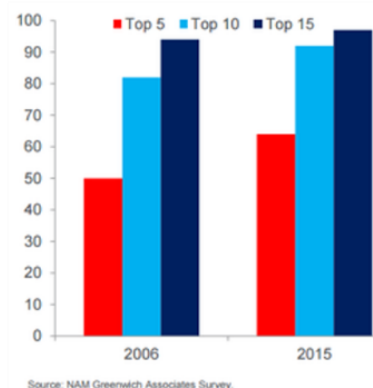


B) Reduced Competition in Secondary Markets

As the outstanding size of the US corporate bond market has increased, secondary trading activity market share has increased with the top 5 market-makers.

According to data from Greenwich Associates, buy-side firms had increased their portion of secondary trading of investment-grade US corporate bonds with the top 5 dealers from 50% in 2006 to 65% in 2015. This shift is notable because it occurred during a period when the outstanding size of the US investment-grade corporate bond market had doubled. Lack of diversification of secondary trading activity is an impediment to reliable institutional market liquidity.

Proportion of investor trading by number of dealers, US IG%



⁵ [Addressing Market Liquidity](#): A Broader Perspective on Today's Bond Markets – Blackrock – November 2016

⁶ Estimates based on data from the Flow of Funds Accounts of the United States

⁷ *Institutional Herding in the Corporate Bond Market* (Cai, Han, Li) – Board of Governors of the Federal Reserve System 2012

⁸ "A handful of giant investors have the fate of the bond market in their hands" – Business Insider – October 2016

⁹ [Who's Afraid of Blackrock](#) – Massa, Schumacher, and Wang – August 7th, 2015

C) Secondary Trading Activity in Institutional Sizes Has Stagnated

As the outstanding size of the US corporate bond market has increased, trading activity in transactions $\geq \$1\text{MM}$ (institutional size) have either stagnated relative to the pace of market growth or are deteriorating.¹⁰

TRACE data reveals that bond turnover ratio has declined for US investment grade bonds, and has languished for US high-yield bonds:

Exhibit 3: US INVESTMENT GRADE: VOLUME, OUTSTANDING, AND TURNOVER



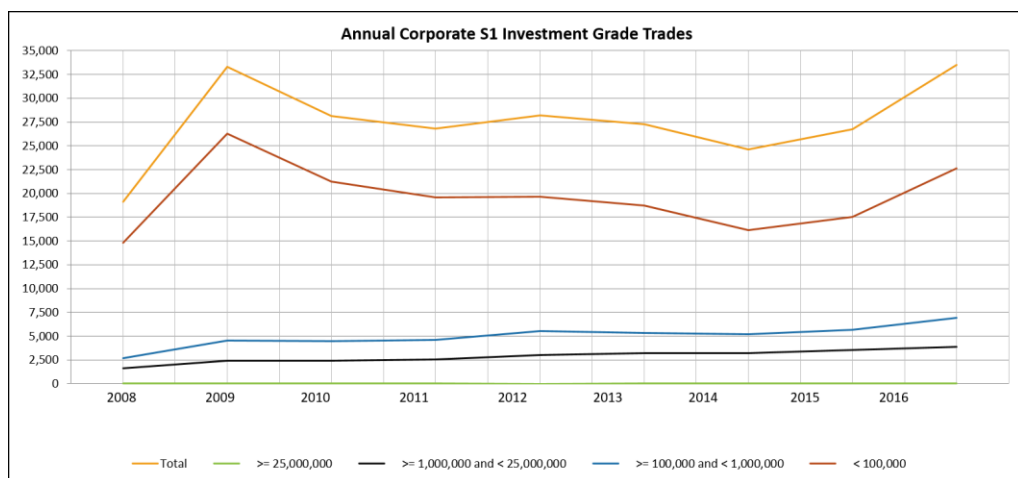
Source: MarketAxess. As of Dec. 31, 2015.

Exhibit 4: US HIGH YIELD: VOLUME, OUTSTANDING, AND TURNOVER



Source: MarketAxess. As of Dec. 31, 2015.

Further examination of TRACE information provides deeper insight into the nature of corporate bond secondary trading activity post the 2008 Credit Crisis:



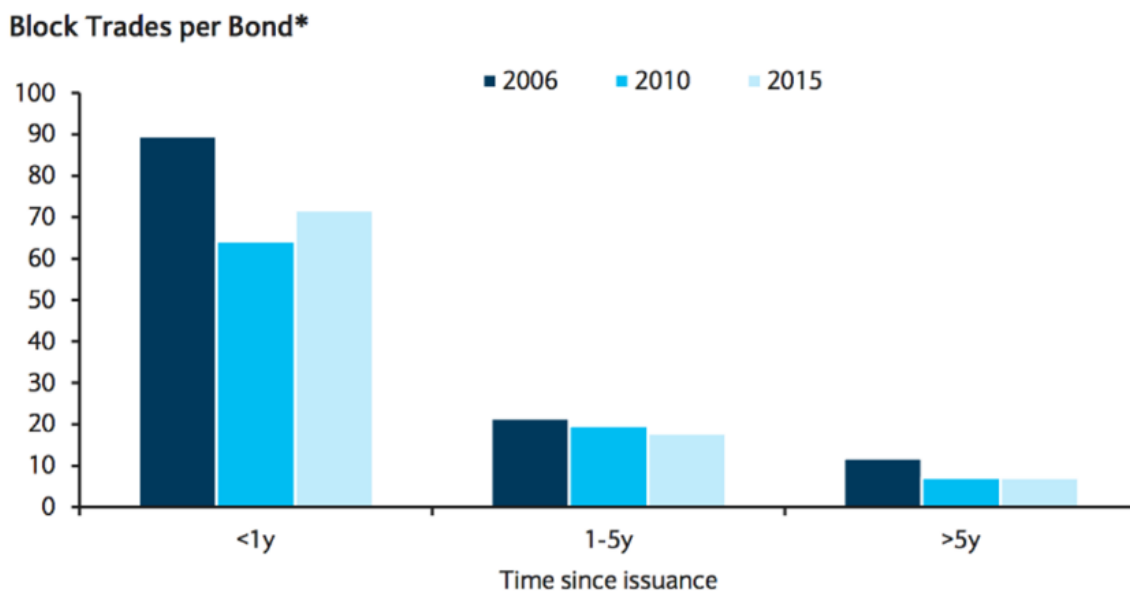
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There has been a 74% increase in the average number of daily trades in the US investment grade market from 2008 (19,146) to 2016 (33,497). However, 84% of the increase in average daily trades was generated by $< \$1\text{MM}$ transactions. This information illustrates how secondary market liquidity for smaller trades ($\leq \$100\text{k}$ & $\leq \$1\text{MM}$) has increased while institutional trading activity has remained relatively constant despite the significant increase in the outstanding size of the US corporate bond market. “Super Block” ($\geq \$25\text{MM}$) trades show the same behavioral pattern which indicates a correlation between secondary trading stagnation and transaction size.

¹⁰ [Addressing Market Liquidity: A Broader Perspective on Today’s Bond Markets](#) – Blackrock – November 2016

¹¹ Chart Source: TRACE FactBook 2016 – Corporate Bond Transactional Data

A closer examination of block trading activity in US corporate bonds exhibits a tendency in the underlying mechanics of secondary market activity. Once a bond has been available to trade for more than a year, institutional ($\geq \$1\text{MM}$) trading activity in that bond wanes dramatically:



* Annualized for bonds issued during the year. Source: TRACE, Barclays Research

This feature is a well-established characteristic of corporate bond market trading. However, on a comparative basis, block trading for older bonds has declined in the past decade even though the outstanding size of the US corporate bond market has more than doubled.

Exhibit 4: Maturities of corporate bonds have increased
 Average maturity of US corporate bonds, by issuance date



The average maturity of US corporate bonds issued in 2015 and 2016 was over 16 years, an increase of 8.6 years when compared to corporate bonds issued from 1995 to 2005.¹² Given the record-breaking amount of US corporate bond new issuance activity post-2008, the future market environment will have a large population of older bonds in circulation. If the current trend of declining institutional liquidity for older bonds is not reversed, the US corporate bond market will become increasingly susceptible to liquidity risks that will negatively impact investors.

IOSCO's current effort to support corporate bond market regulators by articulating a framework for developing corporate bond market transparency, has the potential to address these growing risks in this systemically important financial market. As IOSCO seeks commentary from current market participants as a means to identify the proper guidelines for regulatory reporting and public transparency, they must examine the invaluable history of how other securities markets developed. Modernized market systems originated from humble beginnings characterized by unstructured market data that was fragmented, rarely standardized, and in some cases, non-existent. The tactics used by regulators of the past to successfully cultivate transparency should be incorporated into IOSCO's final guidelines for corporate bond market regulators.

¹² "Goldman Warns of 'Upward Shock' to Rates, Hints at Trillions in Losses" – Zero Hedge – June 2016

2) A Key Parallel – 1960’s US Equity Markets and Current Corporate Bond Markets

A careful examination of the rich history of US equity markets, reveals a period (1962 – 1975) where market conditions closely resemble the current environment for US corporate bonds.

Parallel Market Structure Conditions

A) US Equity Market Expansion

The outstanding size of US equity markets grew substantially, albeit at a slower pace than what we have witnessed in the US corporate bond market. Growth was prevalent across both listed and unlisted markets:

- The aggregate market value of US stocks on all exchanges increased over seven times from 1940 to 1962¹³
- The number of different OTC stocks expanded from 3,700 on Jan 15th 1939, to 8200 on Jan 15th 1963¹⁴

B) US Equity Market “Institutionalization” – Growth in buy-side dominance

In a similar fashion to the trends seen in the current US corporate bond market, as the US equity market grew, institutional buy-side participation dramatically increased.¹⁵

Buy-Side Institution	Equity Holdings 1957	Equity Holdings 1968	Change in Holdings
Pension Funds	\$7.5B	\$54B	+720%
Mutual Funds	\$8B	\$46B	+575%
Insurance Companies	\$8.5B	\$25.5B	+300%
Endowment Funds	\$7.5B	\$23.5B	+313%
Personal Trust Funds	\$28B	\$82.5B	+295%

“In the last 15 years, 20 at most, institutional participation in the ownership and trading in (equity) securities has grown enormously. The initially gradual and then increasing pace of institutionalization in the (equity) securities market is clearly the most important development in the (equity) securities markets during this period.” – Richard B. Smith, SEC Commissioner (January 1969)

C) Reduced Market Maker Participation in US Equity Trading

While there were no official records that calculated the balance sheet levels of US equity market makers, several statements and reports from the SEC indicate that intermediaries (dealers, specialists, market-makers) were reducing their involvement in secondary trading, which mimics the current behavior in US corporate bond markets:

- *“His (the specialist’s) general obligation is to maintain a fair and orderly market. However, when large institutional blocks appear for purchase or sale, the specialist has generally not been in position to handle orders of such magnitude.”* - Richard B. Smith, SEC Commissioner (January 1969)
- *“The market is not going as smoothly as it used to...Institutions buy and sell in large volume, often in blocks...This has placed a severe strain on markets designed to handle smoothly a reasonable steady flow of 100 or 200 share orders”* – Philip A. Loomis Jr., SEC Commissioner (May 1974)
- *“The dealer problem has been aggravated by the fact that many specialists have neither the capital nor the inclination to handle effectively the large orders that come in from institutions”* – Philip A. Loomis Jr., SEC Commissioner (Nov 1975)

¹³ [Report of Special Study of Securities Markets](#) – Letter of Transmittal of July 17, 1963

¹⁴ [Report of Special Study of Securities Markets](#) – Letter of Transmittal of July 17, 1963

¹⁵ Remarks of Richard B. Smith, Commissioner SEC, January 15th 1969

D) Declining Institutional US Equity Market Liquidity

Lack of data in the 1960's made the identification of liquidity issues in the US equity market difficult to assess. However, two major developments in US equity market structure indicate that same institutional liquidity problems experienced by corporate bond market participants were pervasive:

1) The Third Market

Trading in the "Third Market" is defined as trading listed equities in an OTC capacity away from the floor of an exchange. This form of trading gained popularity in the 1960's as large buy-side institutions looked to source deeper pools of liquidity from broker-dealers that acted as "block positioning" market makers.

"New and sophisticated market-making techniques and large pools of capital have developed off the exchanges to meet the demands of increased trading by institutions." – Bradford Cook, Chairman of the SEC – March 1973

2) The Forth Market – Instinet

Trading in the "Forth Market" is done directly between investors through a proprietary trading or communications system. Instinet was founded in 1969 as the first ever electronic communications network (ECN). The original goal of Instinet was to facilitate buy-side to buy-side block trading of US equities to avoid involvement of intermediaries (market makers, dealers, specialists).

The robust transparency that defines modern-day US equity markets was born out of a need to reverse the adverse market conditions that had developed throughout the 1960s. At that time, the US equity market was considered to be a critical national resource, so directly addressing structural issues through the establishment of transparency was a critical priority. It must be noted that the successful development of pre-trade and post-trade transparency in the US equity market did not involve the use of modern technology. The methodology employed by regulators of the past was to outline the architecture needed to generate transparency and articulate clear objectives to guide on-going implementation.

3) Historical Framework for Establishing Securities Market Transparency

The initiative for improving US listed-equity market structure was originally named the "National Market System," but evolved to be called the "Central Market System." This concept was developed after extensive Congressional studies and direct feedback from many people with deep experience in and knowledge of the securities industry.¹⁶ The overriding strategy of the operation was market reform through transparency. This approach not only proved to be effective for dramatically improving US equity markets, it directly or indirectly influenced the subsequent evolution of other prominent securities markets.

The broad outline of the Central Market System was as follows:¹⁷

- Full and complete disclosure of transactions and quotations from all markets in listed securities
- The elimination of barriers to access
- Integration of all market makers into the central market system and subjecting them to appropriate market responsibilities

The first step taken to implement the Central Market System was to define the mechanisms for transaction and quotation disclosure.

¹⁶ "From Here to Modernity" An Address by Ray Garrett, Jr., SEC Chairman – May 1974

¹⁷ "From Here to Modernity" An Address by Ray Garrett, Jr., SEC Chairman – May 1974

Central Market System Architecture

A) Post-Trade Transparency Mechanism – Trade Reporting

Trade and volume reporting had existed in some form for US equities since the invention of the ticker tape in 1870, but prior to 1970, post-trade information for an individual stock was fragmented across multiple markets with no common set of reporting standards. The Central Market System mandated the development of “a network for reporting prices and volume as trades occur so that all the action in a given security can be viewed through a central source.”¹⁸

This approach to post-trade transparency is very similar to the TRACE initiative launched in 2002 for the US corporate bond market.

B) Pre-Trade Transparency Mechanism – Consolidated Quotes

The apparatus for generating pre-trade data under the Central Market mandate was a system that would collect and display the current quotations of specialists and other market makers.¹⁹ This architecture was commonly referred to as a “consolidated quote system” and was modeled after the National Association Securities Dealers Automated Quotation system (NASDAQ) which was launched in 1971.²⁰ Consolidated quote systems are NOT trading platforms, they are best described as non-executable bulletin boards that centralize and organize IOIs and indicative bids and offers from market makers.

This approach to pre-trade transparency is foreign to corporate bond markets. Current pre-trade initiatives in corporate bonds are comprised of model-based pricing products, parsed data derived from Bloomberg messages and chats, direct APIs from dealers to buy-side institutions, and e-trading platforms. These initiatives have not materially reduced price ambiguity for all market participants.

Central Market System Objectives

From a very early stage in the development of the Central Market concept, US equity market regulators articulated the working principles²¹ for ensuring that the purpose and goals of establishing market transparency were met:

A) Competition

This primary objective of the Central Market System was to ensure that competition dictated the direction of order flow for both retail and institutional trading.²² Therefore, the guiding principles were to remove barriers that would impede competition between market makers and market centers (exchanges) and avoid regulatory mandates that could suppress competition.

“Fair competition is stated as one of the primary objectives of the national market system which is to be established. The avoidance of unnecessary burdens on competition is stated as an objective or a requirement in numerous places in the new Act, which even goes so far as to provide in a new Section that if a sanction imposed in a disciplinary proceeding by a self-regulatory body is found to impose any unnecessary burden on competition, it shall be modified or set aside.” – Philip Loomis Jr., SEC Commissioner, November 1975

B) Equality

The intentions of the equality objective were to create a market system that allowed all market participants access to market centers (exchanges) and information (data) services. Therefore, the guiding principles were to establish rules and architecture that would allow investor order flow to match against other investor order flow whenever possible.²³

¹⁸ “Putting the Markets to Work for the Investor” – An Address by Bradford Cook, Chairman of the SEC, March 15th, 1973

¹⁹ “The Central Market System” – Address by Philip A. Loomis Jr – May 29th, 1974

²⁰ “The Central Market System” – Address by Philip A. Loomis Jr – May 29th, 1974

²¹ Details are in the SEC Letter Transmitting the Institutional Investor Report Study to Congress – March 1971

²² “Putting the Markets to Work for the Investor” – An Address by Bradford Cook, Chairman of the SEC, March 15th, 1973

²³ “Putting the Markets to Work for the Investor” – An Address by Bradford Cook, Chairman of the SEC, March 15th, 1973

“In summary, our objective is to see a strong central market system created to which all investors have access, in which, all qualified broker-dealers and existing market institutions may participate” – SEC Transmitting the Institutional Investor Study to Congress –

March 1971

C) Integrity

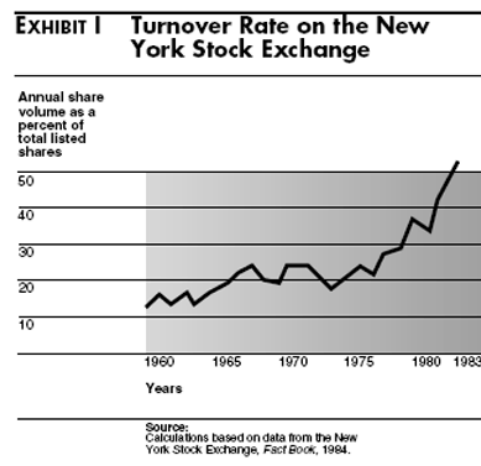
The objective to improve system integrity was to establish a market environment free from manipulation. Therefore, the guiding principle was to subject all market participants and market centers to comparable standards of accountability and responsibility based on their respective role in the market.

“We want a system that is free from manipulation and that provides comparable standards for trading practices and financial responsibility, so that competition is based on price and service rather than the avoidance of regulation.” – Bradford Cook, SEC

Chairman, March 15th, 1973

The Impact of the Central Market System Concept

The underlying theory that transparency would improve US listed-equity market conditions was confirmed in the years following the implementation of the Central Market System in 1975. Prior to the improvements in pre and post-trade transparency, annual share volume and turnover rates for NYSE transactions was stagnant relative to the growth in the overall market. Once centralized trade reporting and consolidated quote information were made available, volume and turnover rates dramatically increased. It is important to note that these market structure improvements were achieved without a meaningful contribution from electronic trading platforms. For example, there was over a 20-year gap between the formation of NASDAQ in 1971 and the appearance of significant electronic trading volumes in OTC or listed equities (in 1988, Instinet transactions represented only 2.84% of US equity market volume²⁴). In addition, the first electronic limit order book (TSE – Computer Assisted Trading System – CATS) did not arrive until 1977 and was specifically designed to help specialists manage smaller, retail order flow.



The most powerful contribution of the Central Market System’s transparency-focused approach is the ongoing influence it has had on the development of other financial markets. For example, a key mechanism of the system, consolidated quotes, has proven itself to be an essential building block to market modernization in FX, European Equities, and US Treasury markets:

Market	Year	Consolidated Quote System
Foreign Exchange	1981	Reuters Monitor Dealing Service
London Stock Exchange	1986	Stock Exchange Automated Quotation
US Government Bonds	1991	GOVPX

The current recommendations set forth in IOSCO’s RR&PTC Report could be enhanced by incorporating elements of the successful Central Market System methodology.

²⁴ “The Impact of Technology on the Trading of Securities” – Solomon, Corso – January 1991

4) Feedback on Current IOSCO RR&PTC Report Transparency Recommendations

The six²⁵ recommendations outlined by IOSCO appear to be effective suggestions for improving the ability of corporate bond market regulators to monitor their respective markets:

- 1) Regulatory authorities should be able to obtain the information necessary to develop a comprehensive understanding of the corporate bond market in their jurisdiction. This understanding should include the characteristics of the market and the types of bonds traded.
- 2) To facilitate cross-border understanding amongst regulators of corporate bond markets, a clear framework and underlying methodology of regulatory reporting and transparency should be available.
- 3) Regulatory authorities should have access, either directly or upon request, to pretrade information where it is available, relating to corporate bonds. This might include information other than firm bids and offers such as indications of interest.
- 4) Regulatory authorities should consider steps to enhance the public availability of appropriate pre-trade information relating to corporate bonds, taking into account the potential impact that pre-trade transparency may have on market liquidity.
- 5) Regulatory authorities should implement post-trade transparency requirements for secondary market trading in corporate bonds. Taking into consideration the specifics of the market these requirements should be calibrated in a way that a high level of post-trade transparency is achieved. They should also take into account the potential impact that post-trade transparency may have on market liquidity. Post-trade transparency requirements should include at a minimum, the disclosure of information about the identification of the bond, the price, the volume, the buy/sell indicator and the timing of execution.
- 6) Where there is transparency of post-trade data relating to corporate bonds, regulatory authorities should take steps to facilitate the consolidation of that data.

If the current recommendations were followed, regulatory authorities would be able to analyze corporate bond market structure more thoroughly, thereby improving their ability to identify manipulative practices and diagnose structural issues. While there are obvious benefits to informing regulators on market practices, we believe that IOSCO's transparency recommendations would have greater positive impact to the global financial system if the recommendations prioritized corporate bond market development in addition to the advancement of regulatory monitoring and observation.

IOSCO's transparency recommendations can be augmented to support global bond market development by including detailed principles for improving pre-trade and post-trade transparency. If these guidelines are effective, IOSCO's recommendations on corporate bond market transparency would enhance the observational capabilities of regulatory authorities, reduce the potential negative consequences of unsound transparency mandates, and accelerate the modernization of corporate bond markets. To assist IOSCO, ViableMkts has outlined three potential principles for improving pre-trade and post-trade transparency

²⁵ There were seven recommendations listed in the report, but #4 and #6 were almost identical. We deleted #4 from our review.

ViableMkts Recommended Transparency Principles

Our suggested principles for improving corporate bond market transparency are inspired by the Central Market System concept and applicable to all corporate bond markets:

1) Access

All market participants must have the same basic level of access to pre-trade and post-trade pricing information. Differentiated access to pricing data creates an environment that fosters manipulation and generates ambiguity that ultimately impedes the negotiation process for large trades.²⁶ Equal access to pre-trade and post-trade pricing information would reduce perceived ambiguity and induce broader and more active participation by both investors and market makers.²⁷

2) Integrity

All pre-trade and post-trade market data must be subject to minimum quality standards with regards to accuracy and timeliness. Poor information quality is not only detrimental to the trading, and valuation process²⁸ for corporate bonds, it causes false assumptions on market structure and performance. Maintaining minimum quality standards combined with the incremental improvement of those standards would gradually enhance price integrity and reduce market manipulation.

3) Competition

The formation of pre-trade data must be done using a competitive process that directly links order flow to price information and quote proficiency. Pre-trade data formed in a non-competitive environment results in low quality information that is often inaccurate. Inferior pre-trade data impairs risk-management, and the ability of market makers to provide institutional liquidity. A competitive process for generating pre-trade data will encourage dealers to provide consistent and accurate pricing information in exchange for valuable order flow. This will result in higher-quality pre-trade data.

Conclusion

IOSCO has consistently provided leadership in securities market development and has correctly identified transparency as a crucial area of improvement for global corporate bond markets. Our commentary was intended to provide a broader perspective on the positive impact transparency has had on modernizing securities markets. As we demonstrated, history provides a successful blueprint for addressing the structural issues facing today's corporate bond markets. We hope our contribution will lead to deeper discussion on the essential components for developing pre-trade and post-trade transparency and will influence the final recommendations of IOSCO.

Contact Information

Email: Chris@viablemkts.com

Phone: 646 449 -7830

Address: 85 Broad Street, NYC 10004

www.viablemkts.com

²⁶ "Pricing in the Dark" – Risk Magazine – January 2017

²⁷ "Microstructure and Ambiguity" Easley and O'Hara – Cornell University – Johnson School Research Paper Series - January 2010

²⁸ "Hedge Fund Saba Capital Calls Redemption Lawsuit a Malicious Attack, Denies Impropriety" – Forbes – October 2015